

How to Make Hand Sanitizer @ Home

**Stop Buying and Make Your Own
Hand Sanitizer at Home**



Issued in Public Interest by:

Shri ESOOFI KHOKHAWALA

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Esoofi Khokhawala

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Introduction

Due to the rapid spread of the novel coronavirus (nCoV), which gives birth to the coronavirus disease 2019 (COVID-19), there has been a high demand of hand sanitizers since the product can be used to kill up to 99 percent of the virus on human hands and other surfaces. Sellers, both locally and online, have taken advantage of the high demand for the product to increase its price to unimaginable levels.

It, therefore, becomes necessary to learn how you can produce a high-quality hand sanitizer at home and cut off unnecessary expenses. Hand sanitizers can be used to kill most germs, including the coronavirus, on the hand before using the same hand to touch your nose, eyes, or mouth and becoming infected with the virus.

Apart from the issue of the coronavirus, it is highly recommended to disinfect your hands any time you touch

surfaces that may have been contaminated with germs. Right here, a hand sanitizer comes to the rescue. The product can be carried around in a small bottle or container.

The Center for Disease Control (CDC) and the World Health Organization (WHO) recommends a hand sanitizer contains at least 60 percent alcohol, which is enough to kill germs and stubborn viruses such as the novel coronavirus on any surface within 60 seconds. The alcohol is the principal component of the mixture. To this end, this material contains hand sanitizer recipes that are in line with the CDC and the WHO recommendations for a home-made or large scale production of a hand sanitizer. You will learn everything you need to know about making a high-quality hand sanitizer at home, including viruses that the hand sanitizer cannot kill. The guide also contains instructions on how to make Aloe vera gel, which is also a primary ingredient required making a hand sanitizer.

Essential Ingredients to Prepare a Hand Sanitizer

Making a hand sanitizer at home does not require much, but just a few ingredients that can be sourced locally or online (e.g., Flipkart, Amazon etc..).

The following ingredients can be used to produce a perfect hand sanitizer that can disinfect surfaces and kill most germs.

1. Alcohol (Isopropyl) (up to 99% alcohol volume).
2. Aloe vera gel.
3. Tea tree / lavender essential oil.
4. Lemon.

The minimum amount of alcohol needed to kill most germs is 60%, and this can only be achieved by mixing a 2:1 alcohol to Aloe vera ratio. This ratio would produce an effective, germ-killing sanitizer. This is a recommendation coming from the Center for Disease Control (CDC).

This material follows a standard recommendation by health practitioners on how to go about producing an effective hand sanitizer.

Home-Made Hand Sanitizer

A doctor in the Viral Disease Division of the CDC, Dr. Rishi recommends the recipe below for the production of a hand sanitizer. He makes bold to say that if the recipe below is used to make a hand sanitizer, it can kill up to 99.9% germs that may be present on a surface after 60 seconds.

His recipe composition include,

- Alcohol (Isopropyl) (up to 99%) - $\frac{3}{4}$ cup.
- Aloe vera gel - $\frac{1}{4}$ cup.
- An essential oil (lavender / tea tree / eucalyptus) or lemon juice - 10 drops.

Why use these ingredients?

Isopropyl Alcohol

The isopropyl alcohol is the main component of the hand sanitizer recipe and would kill up to 99% germs present on your hand or any surface. The compound is a colorless and flammable chemical compound. Isopropyl alcohol is used in the manufacture of a range of household and industrial chemicals. It is also a common ingredient in antiseptic, detergents, and disinfectants.

Isopropyl alcohol is particularly useful for the production of a hand sanitizer because it evaporates quickly and leaves no oil traces. It is also relatively non-toxic when compared to other solvents. The compound can also be used to clean electrical contacts, eyeglasses, audio / video tape heads, etc.

Aloe vera gel

The Aloe vera gel is the colorless, odorless liquid from the Aloe vera plant. It is succulent, and the leaves contain over 98% water in the form of a gel, which is

rich in many useful compounds. You can buy the Aloe vera gel online, in a local store, or produce it at home if you've been cultivating it in your garden.

The gel from the aloe vera plant is great for sunburns, wounds or minor cuts, bug bites, and other skin problems. The gel is highly moisturizing too. It's easy, and it's also recommended that you cultivate the Aloe vera plant at home because many Aloe vera gel sold out there are mixed with dyes, which is potentially harmful.

How to Prepare the Aloe Vera Gel at Home

You can purchase the Aloe vera leaves at a kirana/grocery store, Green plant nursery/farmer's market, or harvest it from your garden if you cultivate it and extract the gel easily.

What you need

1. Aloe vera leaves.
2. A knife.
3. A blender.
4. A container for storage, which must be airtight.
5. Powdered vitamin C / E (optional).

Note: The Aloe vera gel lasts for about one week, and it's recommended that you process only a quantity that you need at a time and use all. You may have to add preservatives (powdered vitamin C / E) if you intend to keep it for a more extended period. You can also keep it refrigerated.

Direction

It takes about 20-30 minutes to produce an Aloe vera gel.

1. Prep the Aloe vera leaves

- (a) Cut the leaves from the plant. You can also buy it from a store.
- (b) Wash and remove all dirt. Stand it upright for up to 10 minutes or more to drain out the yellow-tinted resin. This step is vital because of the latex present in the resin.
- (c) Wash off any remains of the resin and peel off the skin using a vegetable peeler or knife.

2. Make your gel

- (a) Peeling the leave exposes the natural Aloe vera gel.
- (b) Scoop it using a spoon into your blender. Don't allow particles of the Aloe vera skin into the blender.
- (c) Blend the gel to liquefy it.

3. Add preservatives (optional)

This step is necessary only if you plan on keeping it for more than a week. As said earlier, vitamin C or E can be used as a preservative to extend the life of the Aloe vera gel. You may choose to add only one or both of these vitamins.

For every 60 ml or ¼ cup of Aloe vera gel, add only 500 / 400 mg of vitamin C / E, or both. Add the vitamin to the mixture and stir it again until the two things blend perfectly.

Storage directions

1. Store the Aloe vera gel without a preservative in the fridge and use it within a week.
2. Adding the vitamins considerably increases the shelf life of the Aloe vera gel for more than a week and up to two months refrigerated.
3. When kept frozen, you can keep it for up to 6 months.
4. Store it in an airtight container.

Application of Aloe vera gel

- The Aloe vera gel can be rubbed on the skin directly to fix skin problems such as sunburns, skin irritation, wounds, etc.
- It's a great moisturizer for the face.
- It's an antioxidant and can give relief for sunburn.
- It's rich in polysaccharides, which is good for the skin.

- It's also rich in vitamins A, C, & E as well as minerals. These elements act to promote healthy skin and speed up the recovery of the skin from problems.

Essential oil and Lemon Juice

The essential oils used in the preparation of a hand sanitizer are basically employed for its aroma in the mixture. The lemon juice, on the other hand, can also contribute as a disinfectant in the mixture.

Direction to Produce a Hand Sanitizer

1. Turn all the required ingredients into a clean bowl. A bowl with a pouring spout is most recommended.
2. Mix with a turning stick to blend everything together.
3. Turn the mixture into an airtight bottle or an old sanitizer container, but remember to remove the original label from the container. You can then label it "My home-made hand sanitizer" or ignore labeling it.

A similar formula was also shared by Jagdish Khubchandani, Ph.D of Ball State University.

Find his composition below:

1. Ethanol or isopropyl alcohol (two parts) (91% to 99% alcohol).
2. Aloe vera gel (one part).
3. Clove / eucalyptus / peppermint essential oil.

Tips:

1. Make sure everything is prepared in a clean space and on a sterilized surface.
2. Make sure your hands are clean.
3. Use a clean spoon and whisk to mix.
4. Use undiluted alcohol.
5. Wear gloves to work with the mixture if you need to touch it.

The World Health Organization (WHO) has made a composition for large scale production.

It uses:

1. Ethanol or isopropyl alcohol.
2. Hydrogen peroxide.
3. Glycerol.
4. Sterile distilled water. You can also boil tap water and allow it to cool before using it.

Application of Hand Sanitizer to the Skin

- Rub the hand sanitizer on clean skin and rub it until it dries up from your hand.
- Wash your hands with soap and water if they are dirty or greasy before application.

Further tips for effective use

1. Spray the product into your palm.
2. Rub both hands together to cover its entire surface and all fingers.
3. Continue rubbing until your hands are completely dry. It may take up to 60 seconds or more to kill most germs.

What Germs Can a Hand Sanitizer Destroy?

The Center for Disease Control (CDC) has said that an alcohol-based sanitizer containing the required alcohol volume can kill most microbes on your hands. Such hand sanitizer can also kill even the novel coronavirus that may be present on your hand or other surfaces.

The CDC has also said that the mixture can't rid your hands of potentially harmful chemicals. It may also fail to destroy the following germs.

- Norovirus.
- Clostridium difficile.
- Cryptosporidium.

After working in your garden, playing games, or working with food, wash your hands with soap and water before applying the hand sanitizer.

What's the Difference between Hand Washing and using a Hand Sanitizer?

These two are not the same, **and priority should be placed on hand washing** over using a hand sanitizer. Hand washing with soap and water should be prioritized over the use of hand sanitizer.

It can be really helpful knowing when to wash your hands or rubbing a hand sanitizer. This can help you respond effectively to the widespread coronavirus and other illnesses such as the seasonal flu and common cold.

The CDC recommends you only turn to a hand sanitizer when soap and water aren't around. However, how effective can you wash your hands?

- do it after coming out of the bathroom.
- do it after sneezing, coughing or blowing your nose.
- do it before eating.
- do it after rubbing your hands on surfaces that might be contaminated.

And in doing so,

- use clean and running, warm, or cold water.

- first of all, wet your hand with the water, turn it off, rub soap for over 20 minutes and then wash your hands.
- don't forget to scrub the back and between fingers.
- cut your nails or make sure you can wash underneath it very well.
- rinse your hands well, air dry, or use a tissue or clean towel.

Finally, don't forget to take your hand sanitizer in a little bottle along with you should there be a need to use it. Encourage good hygiene in your home. Keep everywhere clean, and stay safe.